

What it is claimed is:

1. An apparatus for connecting an integrated circuit to a support, comprising:

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a circuit board having a first surface for attaching the integrated circuit and a second surface opposite to the first surface;

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recesses provided in the second surface for receiving at least portions of solder balls for electrically and mechanically connecting the circuit board to the support; and

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solder pads formed within the recesses.

2. The apparatus of claim 1, wherein a bond pad is provided on the circuit board and wherein the circuit board comprises conductive structures connecting the bond pad to

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at least one of the solder pads.

3. The apparatus of claim 1, wherein the circuit board comprises a first insulating layer, a second insulating layer and a conductive pattern between the first and the

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second insulating layer.

4. The apparatus of claim 3, wherein the recesses extend through the second dielectric layer and wherein a portion of the conductive pattern forms the solder pad of

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at least one of the recesses.

5. The apparatus of claim 1, wherein a conductive pattern is formed on the second surface of the circuit board.

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6. The apparatus of claim 5, wherein at least one of the recesses extend through the conductive pattern on the second surface of the integrated circuit.

7. The apparatus of claim 6, wherein at least two of the recesses extend through the conductive pattern on the second surface of the integrated circuit, wherein solder balls are received in the at least two of the recesses, one of the solder balls being electrically connected to the conductive pattern on the second surface of the integrated circuit and one of the solder balls being insulated therefrom.
8. The apparatus of claim 1, wherein the circuit board comprises a plurality of insulating layers defining different levels of the circuit board and a plurality of conductive patterns arranged in the different levels, said circuit board further comprising a first recess and a second recess, wherein in a first conductive pattern arranged on a first level extends to the first recess and a second conductive pattern arranged on a second level extends to the second recess wherein a first solder ball which is at least partially received in the first recess is electrically connected to the first conductive pattern and a second solder ball which is at least partially received in the second recess is electrically connected to the second conductive pattern.
9. The apparatus of claim 5, wherein the conductive pattern on the second surface of the circuit board is a ground pattern or a power supply pattern.
10. The apparatus of claim 1, wherein solder balls are received in the recesses, wherein the circuit board comprises conductive structures for connecting at least some of the solder balls to a signal contact pad on the integrated circuit and for connecting at least another of the solder balls to a ground or power supply contact pad on the integrated circuit.

11. An IC BGA package comprising:

an integrated circuit;

5 a circuit board having a first surface to which the integrated circuit is attached and a second surface opposite to the first surface;

10 recesses provided in the second surface for receiving at least portions of solder balls for electrically and mechanically connecting the circuit balls to a support;

solder pads are formed within the recesses; and

15 solder balls at least partially received in the recesses and applied to the solder pads.

12. The IC BGA package of claim 11, wherein a bond pad is provided on the circuit board and wherein the circuit  
20 board comprises conductive structures connecting the bond pad to at least one of the solder pads.

13. The IC BGA package of claim 11, wherein the circuit  
25 board comprises a first insulating layer, a second insulating layer and a conductive pattern between the first and the second insulating layer.

14. The IC BGA package of claim 13, wherein the recesses extend through the second dielectric layer and wherein a  
30 portion of the conductive pattern forms the solder pad of at least one of the recesses.

15. The IC BGA package of claim 11, wherein a conductive  
35 pattern is formed on the second surface of the circuit board.

16. The IC BGA package of claim 15, wherein at least one of the recesses extend through the conductive pattern on the second surface of the integrated circuit.
- 5 17. The IC BGA package of claim 16, wherein at least two of the recesses extend through the conductive pattern on the second surface of the integrated circuit, wherein solder balls are received in the at least two of the recesses, one of the solder balls being electrically connected to the conductive pattern on the second surface of the integrated circuit and one of the solder balls being insulated therefrom.
- 10 18. The IC BGA package of claim 11, wherein the circuit board comprises a plurality of insulating layers defining different levels of the circuit board and a plurality of conductive patterns arranged in the different levels, said circuit board further comprising a first recess and a second recess, wherein in a first conductive pattern arranged on a first level extends to the first recess and a second conductive pattern arranged on a second level extends to the second recess wherein a first solder ball which is at least partially received in the first recess is electrically connected to the first conductive pattern and a second solder ball which is at least partially received in the second recess is electrically connected to the second conductive pattern.
- 15 20. The IC BGA package of claim 11, wherein the circuit board comprises conductive structures for connecting at least one of the solder balls to a signal contact pad on the integrated circuit and for connecting at least an-
- 20 19. The IC BGA package of claim 15, wherein the conductive pattern on the second surface of the circuit board is a ground pattern or a power supply pattern.
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other of the solder balls to a ground or power supply  
terminal on the integrated circuit.